CIRM Center of Excellence at Buck Institute for Age Research

Grant Award Details

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Grant Type: Major Facilities

Grant Number: FA1-00600

Investigator:

Name:	Mary McEachron
Institution:	Buck Institute for Age Research
Type:	PI

Award Value: $20,500,000

Status: Closed

Grant Application Details

Application Title: CIRM Center of Excellence at Buck Institute for Age Research

Public Abstract:

Facility

The Buck Institute for Age Research proposes to develop a CIRM Major Facility to investigate the role of stem cells in aging and in the pathogenesis, diagnosis and treatment of age-related disease. A new building devoted to human embryonic stem cell (hESC) research will be constructed adjacent to space earmarked for our CIRM Shared Research Laboratory and Stem Cell Techniques Course. The project will be expedited by our recent experience completing a NCRR Center for Integrative Studies of Aging on time and within budget. The CIRM Major Facility will contain laboratories for 12 principal investigators (PIs) and space for cell culture, shared equipment and research cores. The cores will be devoted to cell sorting, imaging, genomics, proteomics, high-throughput screening (HTS), electrophysiology and bioinformatics/statistics, and will be fiscally separate satellites of existing, NIH-supported cores. The CIRM Major Facility will be closely integrated with our CIRM Shared Research Laboratory, which will house another 4 PIs. Core support within the Institute but outside the Facility will include the vivarium and the transgenic and animal-behavior cores.

Program

The Buck Institute's stem-cell program is focused on understanding the role of stem cells in aging and age-related diseases and identifying ways in which stem-cell technology can used for diagnosis or treatment. The current program comprises both basic/discovery and preclinical/translational research. Basic/discovery hESC projects include studies of epigenetic control, programmed cell death, senescence, hypoxic regulation, IGF/TOR pathways, cell-cycle checkpoints, mitochondrial function, pluripotency factors and genome integrity. Preclinical/translational projects include studies of hESC-derived cells in animal models of Parkinson's, Alzheimer's and Huntington's diseases, stroke and aging, as well as HTS for hESC-interacting factors.

Program Development

The proposed CIRM Major Facility will support expansion of the Buck Institute's stem-cell research program to a total of 16 PIs engaged primarily or exclusively in stem-cell projects, accounting for about 40% of our faculty by 2011. The CIRM Major Facility will house 6 current PIs, 3 recruits from ongoing searches targeting diabetes, cardiovascular disease and motor neuron disease, and 3 future recruits prescribed by the Buck Institute's strategic plan, while our CIRM Shared Research Laboratory will house 4 additional PIs. The CIRM Major Facility will also enhance the contributions of our CIRM Shared Research Laboratory and Stem Cell Techniques Course to the stem-cell community. Our hope is that collectively, these efforts will lead to the development of tools (hESC culture techniques, optimal hESC differentiation for transplantation, drug screens), diagnostics (markers of aging and age-related diseases) and therapies (drugs, transplantation strategies) for diseases associated with aging, including neurodegenerative disorders and cancer.

Statement of Benefit to California:	The 2000 US Census showed that 10.6% of Californians were aged 65 or older and 1.3% were 85 or older. According to a 2003 special report from the California Policy Research Center on "The Growth and Aging of California's Population", the proportion of Californians aged 65 or older will increase to 20.5% over the next 50 years, and 4% will be 85 or older. As noted in the California Health and Human Services Agency's 2003 Strategic Plan for an Aging California Population, many of these individuals can be expected to suffer from chronic diseases such as cancer and Alzheimer's disease, so that a key element in preparing for the aging of California will be "developing new treatment modalities and medications that slow disease progression, improve treatment of symptoms, and/or reverse the course of disease". The Buck Institute for Age Research is devoted to research on aging and age-related diseases. We propose to develop a CIRM Major Facility to investigate the role of stem cells in aging and in the pathogenesis, diagnosis and treatment of age-related disease. A new building devoted to human embryonic stem cell (hESC) research will be constructed adjacent to our CIRM Shared Research Laboratory and Stem Cell Techniques Course, and will contain laboratories for 12 principal investigators (PIs) and research cores. The CIRM Major Facility will be closely integrated with our CIRM Shared Research Laboratory, which will house another 4 PIs and additional cores. The Buck Institute's stem-cell program is focused on understanding the role of stem cells in aging and age-related diseases and identifying ways in which stem-cell technology can used for diagnosis or treatment. The current program comprises both basic/discovery and preclinical/translational research. Basic/discovery hESC projects include studies of epigenetic control, programmed cell death, senescence, hypoxic regulation, IGF/TOR pathways, cell-cycle checkpoints, mitochondrial function, pluripotency factors and genome integrity. Preclinical/translational projects include studies of hESC-derived cells in animal models of Parkinson's, Alzheimer's and Huntington's diseases, stroke and aging, as well as HTS for hESC-interacting factors. The proposed CIRM Major Facility will support expansion of our stem-cell research program to a total of 16 PIs engaged primarily or exclusively in stem-cell projects, accounting for about 40% of our faculty by 2011. In addition to the areas listed above, ongoing or planned faculty searches are targeting diabetes, cardiovascular disease and motor neuron disease. The CIRM Major Facility will enhance the contributions of our CIRM Shared Research Laboratory and Stem Cell Techniques Course and help lead to the development of tools (hESC culture techniques, optimal hESC differentiation for transplantation, drug screens), diagnostics (markers of aging and age-related diseases) and therapies (drugs, transplantation) for diseases associated with aging.

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